

In the Claims:

Following is a complete listing of the claims added to the reissue application by this preliminary amendment:

13. (New) An aircraft, comprising:
a fuselage,
at least one wing attached to the fuselage, the at least one wing having a sweep angle of up to about ten degrees, the at least one wing including:
a forward airfoil element having an upper surface and a lower surface;
an aft airfoil element having an upper surface and a lower surface;
an internal structure including at least one spar having a sweep angle of up to about ten degrees; and
an airfoil structure coupled between the first and second airfoil elements, the airfoil structure having a slot that allows airflow from the forward airfoil element to the aft airfoil element, wherein during cruising flight of the aircraft, the airfoil structure diverts some of the air flowing along the lower surface of the forward airfoil element through the slot to flow over the upper surface of the aft airfoil element, the lower surface of the forward airfoil element and the lower surface of the aft airfoil element being shaped to provide an efficient cross section for a main structural box of the wing; and
landing gear depending from the fuselage.
14. (New) The aircraft of claim 13 wherein the at least one wing is at least approximately unswept.
15. (New) The aircraft of claim 13 wherein the slot is configured to remain open at all flight conditions.
16. (New) The aircraft of claim 13 wherein the at least one wing is configured to operate at a cruise Mach number of 0.78 or higher.

17. (New) The aircraft of claim 13 wherein the at least one spar includes a forward spar and an aft spar forming portions of opposing sides of a wing box.

18. (New) The aircraft of claim 13 wherein the at least one wing includes a forward spar and an aft spar and wherein at least one of the forward and aft spars is at least approximately unswept.

19. (New) The aircraft of claim 13 wherein the at least one spar extends in an at least generally straight line from one side of the fuselage to the other.

20. (New) The aircraft of claim 13 wherein the at least one wing includes a single wing having a common structure extending from a first side of the fuselage to a second side of the fuselage.

21. (New) The aircraft of claim 13 wherein the at least one wing includes a single wing having a unitary structure extending from a first side of the fuselage to a second side of the fuselage.

22. (New) The aircraft of claim 13 wherein the at least one wing includes a structure extending from a first side of the fuselage to a second side of the fuselage without a splice.

23. (New) The aircraft of claim 13 wherein the slot extends over less than an entire span of the at least one wing.

24. (New) The aircraft of claim 13 wherein the slot extends over at least approximately a full span of the at least one wing.

25. (New) The aircraft of claim 13 wherein the at least one wing includes a single wing extending from a first tip on a first side of the fuselage to a second tip on a second side of the fuselage, and wherein the at least one wing further includes forward

and aft spars, the forward spar extending from a first position at least proximate to the first tip to a second position at least proximate to the second tip, the aft spar extending from a third position at least proximate to the first tip to a fourth position at least proximate to the second tip.

26. (New) The aircraft of claim 13 wherein the airfoil structure is movable to form a second slot aft of the first slot and divert additional air from the lower surface of the forward airfoil to the upper surface of the aft airfoil.

27. (New) The aircraft of claim 13 wherein at least one of the upper surface and lower surface of at least one of the forward and aft airfoil elements includes a composite material.

28. (New) The aircraft of claim 13, further comprising a propulsion system depending from at least one of the at least one wing and the fuselage.

29. (New) The aircraft of claim 13, further comprising an empennage aft of the at least one wing.

30. (New) The aircraft of claim 13 wherein the slot is configured to divert air sufficient to increase a critical Mach number of the aircraft.

31. (New) The aircraft of claim 13 wherein the slot is configured to divert air sufficient to increase a maximum cruise speed of the aircraft.

32. (New) An aircraft, comprising:
a fuselage,
at least one wing attached to the fuselage, the at least one wing having a sweep angle of up to about ten degrees, the at least one wing including:
a forward airfoil element having an upper surface and a lower surface;

at least one spar positioned within the forward airfoil element and having a sweep angle of up to about ten degrees;
an aft airfoil element having an upper surface and a lower surface, the aft airfoil element being coupled to the forward airfoil element, the aft airfoil element having a leading edge spaced apart from a portion of the forward airfoil element with a slot positioned between the portion of the forward airfoil element and the leading edge of the aft airfoil element, the slot being configured to be open during cruise flight to divert some of the air flowing along the lower surface of the forward airfoil element to flow over the upper surface of the aft airfoil element;
a propulsion system depending from at least one of the wing and the fuselage;
and
landing gear depending from the fuselage.

33. (New) The aircraft of claim 32 wherein the at least one wing is configured for a subsonic cruise speed of at least Mach 0.78.

34. (New) The aircraft of claim 32 wherein the at least one wing has an at least approximately unswept leading edge.

35. (New) The aircraft of claim 32 wherein the at least one spar is at least approximately unswept.

36. (New) The aircraft of claim 32 wherein the slot is configured to divert air sufficient to increase a critical Mach number of the aircraft.

37. (New) The aircraft of claim 32 wherein the slot is configured to divert air sufficient to increase a maximum cruise speed of the aircraft.

38. (New) The aircraft of claim 32 wherein the at least one spar extends in an at least generally straight line from one side of the fuselage to the other.

39. (New) The aircraft of claim 32 wherein the at least one wing includes a single wing having a unitary structure extending from a first side of the fuselage to a second side of the fuselage.

40. (New) The aircraft of claim 32 wherein the slot extends over less than an entire span of the at least one wing.

41. (New) The aircraft of claim 32 wherein the slot extends over at least approximately a full span of the at least one wing.

42. (New) An aircraft system, comprising:

at least one wing having an upper surface shaped to include at least one transonic region during cruise flight, the at least one wing further including: a forward airfoil element having an upper surface portion and a lower surface portion; and an aft airfoil element coupled to the forward airfoil element, the aft airfoil element having an upper surface portion and a lower surface portion, at least a part of the aft airfoil element being spaced apart from a part of the forward airfoil element by a slot, the slot being configured to be open during cruise flight to divert some of the air flowing along the lower surface portion of the forward airfoil element to flow over the upper surface portion of the aft airfoil element, the aft airfoil element overlapping the forward airfoil element by a distance at least approximately equal to three percent of a combined chord length of the two airfoil elements.

43. (New) The aircraft system of claim 42 wherein the at least one wing is shaped to be efficient at a transonic condition.

44. (New) The aircraft system of claim 42, further comprising:
a fuselage coupled to the at least one wing,
a propulsion system depending from at least one of the at least one wing and the fuselage; and
landing gear depending from at least one of the at least one wing and the fuselage.
45. (New) The aircraft system of claim 42 wherein the at least one wing is at least approximately unswept.
46. (New) The aircraft system of claim 42 wherein the slot is configured to remain open at all flight conditions.
47. (New) The aircraft system of claim 42 wherein the slot extends over less than an entire span of the at least one wing.
48. (New) The aircraft system of claim 42 wherein the slot extends over at least approximately a full span of the at least one wing.
49. (New) The aircraft system of claim 42 wherein the slot is a first slot and wherein the aft airfoil element includes a forward portion and an aft portion, at least one of the forward portion and the aft portion being movable relative to the other to form a second slot aft of the first slot and divert additional air from the lower surface of the forward airfoil to the upper surface of the aft airfoil.
50. (New) The aircraft system of claim 42 wherein the slot is configured to divert air sufficient to increase a critical Mach number of the aircraft.
51. (New) The aircraft system of claim 42 wherein the slot is configured to divert air sufficient to increase a maximum cruise speed of the aircraft.

52. (New) An aircraft system, comprising:

at least one wing having a leading edge and an upper surface, the upper surface being shaped to include at least one transonic region during cruise flight, the at least one wing further including:

a forward airfoil element having an upper surface portion and a lower surface portion; and

an aft airfoil element coupled to the forward airfoil element, the aft airfoil element having an upper surface portion and a lower surface portion, at least a part of the aft airfoil element being spaced apart from a part of the forward airfoil element by a slot, the slot being configured to be open during cruise flight to divert some of the air flowing along the lower surface portion of the forward airfoil element to flow over the upper surface portion of the aft airfoil element, the slot being positioned to increase a Mach number at which the wing undergoes transonic drag rise by about 0.03 compared with a wing having generally similar shape without the slot, the Mach number corresponding to a component of flow travelling generally normal to the leading edge of the wing.

53. (New) The aircraft system of claim 52, further comprising:

a fuselage coupled to the at least one wing;

a propulsion system depending from at least one of the at least one wing and the fuselage; and

landing gear depending from at least one of the at least one wing and the fuselage.

54. (New) The aircraft system of claim 52 wherein the at least one wing is shaped to be efficient at a transonic condition.

55. (New) The aircraft system of claim 52 wherein the at least one wing is at least approximately unswept.

56. (New) The aircraft system of claim 52 wherein the slot is configured to remain open at all flight conditions.

57. (New) The aircraft system of claim 52 wherein the at least one wing includes at least one spar that is at least approximately unswept.

58. (New) The aircraft system of claim 52 wherein the slot extends over less than an entire span of the at least one wing.

59. (New) The aircraft system of claim 52 wherein the slot extends over at least approximately a full span of the at least one wing.

60. (New) The aircraft system of claim 52 wherein the slot is a first slot and wherein the aft airfoil element includes a forward portion and an aft portion, at least one of the forward portion and the aft portion being movable relative to the other to form a second slot aft of the first slot and divert additional air from the lower surface of the forward airfoil to the upper surface of the aft airfoil.

61. (New) The aircraft system of claim 52 wherein the aft airfoil element overlaps the forward airfoil element by a distance at least approximately equal to three percent of a combined chord length of the two airfoil elements.

62. (New) An aircraft system, comprising:
at least one wing, the at least one wing including:
a forward airfoil element having an upper surface and a lower surface;
an aft airfoil element having an upper surface and a lower surface;
an internal structure including at least one spar having a sweep angle of
up to about ten degrees; and
an airfoil structure coupled between the first and second airfoil elements,
the airfoil structure having a slot that allows airflow from the forward
airfoil element to the aft airfoil element, wherein during cruising

flight of the at least one wing, the airfoil structure diverts some of the air flowing along the lower surface of the forward airfoil element through the slot to flow over the upper surface of the aft airfoil element, the lower surface of the forward airfoil element and the lower surface of the aft airfoil element being shaped to provide an efficient cross section for a main structural box of the wing.

63. (New) The aircraft system of claim 62 wherein the slot extends over less than an entire span of the at least one wing.

64. (New) The aircraft system of claim 52 wherein the slot extends over at least approximately a full span of the at least one wing.

65. (New) A method for manufacturing an aircraft system, comprising forming at least a portion of an aircraft wing by coupling a forward airfoil element to an aft airfoil element, with the aft airfoil element overlapping the forward airfoil element by a distance at least approximately equal to three percent of a combined chord length of the two airfoil elements, and with a slot positioned between at least part of the forward airfoil element and at least part of the aft airfoil element, the slot being configured to be open during cruise flight to divert some of the air flowing along a lower surface of the forward airfoil element to flow over an upper surface of the aft airfoil element.

66. (New) The method of claim 65, further comprising:
attaching the aircraft wing to a fuselage;
connecting a propulsion system to at least one of the aircraft wing and the fuselage; and
coupling landing gear to at least one of the aircraft wing and the fuselage.

67. (New) The method of claim 65 wherein forming at least a portion of an aircraft wing includes forming at least a portion of an at least approximately unswept wing.

68. (New) The method of claim 65, further comprising configuring the slot to remain open at all flight conditions.

69. (New) The method of claim 65, further comprising supporting the aircraft wing with at least one spar that is at least approximately unswept.

70. (New) The method of claim 65, further comprising positioning the slot to extend over less than an entire span of the aircraft wing.

71. (New) The method of claim 65, further comprising positioning the slot to extend over at least approximately a full span of the aircraft wing.

72. (New) A method for manufacturing an aircraft system, comprising:
coupling a forward airfoil element to an aft airfoil element to form at least a portion of an aircraft wing; and
positioning a slot between at least part of the forward airfoil element and at least part of the aft airfoil element to increase a Mach number at which the aircraft wing undergoes transonic drag rise by about 0.03 compared with an aircraft wing having generally similar shape without the slot, the Mach number corresponding to a component of flow travelling generally normal to the leading edge of the aircraft wing, the slot being configured to be open during cruise flight to divert some of the air flowing along a lower surface of the forward airfoil element to flow over an upper surface of the aft airfoil element.

73. (New) The method of claim 72, further comprising:
attaching the aircraft wing to a fuselage;
connecting a propulsion system to at least one of the aircraft wing and the fuselage; and
coupling landing gear to at least one of the aircraft wing and the fuselage.

74. (New) The method of claim 72 wherein forming at least a portion of an aircraft wing includes forming at least a portion of an at least approximately unswept wing.

75. (New) The method of claim 72, further comprising configuring the slot to remain open at all flight conditions.

76. (New) The method of claim 72, further comprising supporting the aircraft wing with at least one spar that is at least approximately unswept.

77. (New) The method of claim 72, further comprising positioning the slot to extend over less than an entire span of the aircraft wing.

78. (New) The method of claim 72, further comprising positioning the slot to extend over approximately a full span at the aircraft wing.